



## 16ft. (5m) Shelter Dome

### Owners Setup and Operation Manual

*Please read the entire instruction manual before assembling your dome.*



**PACIFIC DOMES, INC.**

PO Box 1047 • Ashland, OR 97520 • (888) 488-8127 • [www.PacificDomes.com](http://www.PacificDomes.com)



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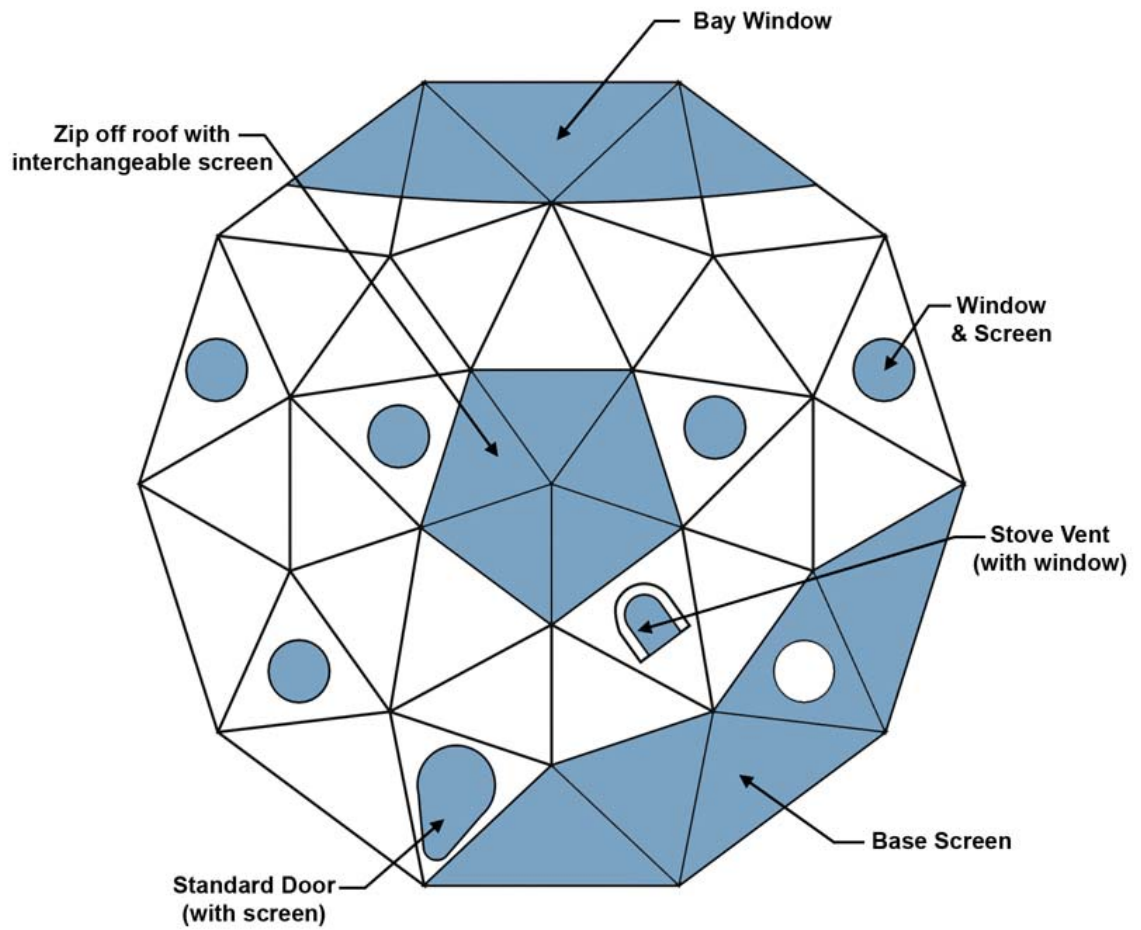
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## 16' Standard Dome Overhead



# Limited Warranty

## **LIMITED WARRANTY**

Pacific Domes warrants its Products against defects in materials and workmanship for ninety (90) calendar days from the date the product is shipped. In case of defect Pacific Domes, at its sole option, shall repair or replace the Product. Pacific Domes further warrants that covers will not excessively degrade from exposure under normal conditions for 2 to 5 years, depending on the fabric or vinyl used. A cover has degraded excessively if it exhibits fading or loss of strength to the extent that Product cannot be used under normal conditions.

EventLite Fabric:	2 year warranty
SunLite Fabric:	3 year warranty
Tropical, Event, Blackout & Clear Marine Vinyl:	3 year warranty
Tropical Plus:	5 year warranty

This limited warranty does not cover any defect due to: modification or alteration of the Product; use not in accordance with Product manuals; neglect, misuse, accident, abuse or vandalism; unauthorized or improperly performed repairs; improper assembly, installation or disassembly; improper maintenance or unusual physical stress; improper storage; extreme weather conditions; acts of God; and wear and tear to vinyl appliques that may occur during assembly or disassembly of the Product.

## **LIMITATION OF LIABILITY**

PACIFIC DOMES MAKES NO OTHER EXPRESS WARRANTIES. ANY IMPLIED WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE PERIOD OF THE EXPRESS WARRANTY.

YOUR REMEDIES ARE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT AT PACIFIC DOMES' SOLE OPTION. PACIFIC DOMES WILL NOT BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES ARISING FROM THE USE, PURCHASE OR REPAIR OF THE PRODUCT, INCLUDING DAMAGES FOR LOST PROFITS AND LOSS OF USE.

TO THE FULLEST EXTENT PERMITTED BY LAW, PACIFIC DOMES AND ITS SUBCONTRACTORS OR AFFILIATES WILL NOT BE LIABLE FOR INJURIES TO PERSONS OR PROPERTY CAUSED BY THE ASSEMBLY, INSTALLATION, DISASSEMBLY OR USE OF A PRODUCT.

SOME STATES AND JURISDICTIONS DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, ON DAMAGES FOR INJURIES TO PERSONS OR PROPERTY, OR THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU. YOU MAY HAVE OTHER RIGHTS WHICH VARY FROM STATE/JURISDICTION TO STATE/JURISDICTION.

## **WARRANTY SERVICE**

To obtain warranty service, you must request a Return Material Authorization ("RMA") number by calling Pacific Domes at 1-888-488-8127. If you are located outside of the United States, please call 541-488-7737. Within 5 business days after receiving the RMA, you must package the Product in its original packing material or an equivalent substitute and display the RMA number clearly on the outside of the package. You must return the Product to the designated Pacific Domes' facility freight prepaid and properly insured at your expense. You bear the sole risk of loss for damage that occurs during shipping. Pacific Domes, at its sole option, will either repair the Product with new or used parts of the same quality or replace the non-conforming Product. Pacific Domes will pay the cost of shipping the repaired or replacement Product to you.



# Permitting

**To be approved for permitting, your dome comes with an engineering document upon request.** Waqidi Falicoff has created a custom structural engineering program for Pacific Domes. He holds a rare PhD in Geodesic Design and has worked directly with R. Buckminster Fuller. Using this program we can engineer any size dome to meet your county's requirements for snow, wind and seismic zone. If you require engineering specs, please provide us with the following information from your county building department:

1. Seismic zone (0 through 4)
2. Snow load (pounds per square foot)
3. Wind speed (miles per hour)

The Pacific Domes architect is licensed in California, Oregon and Idaho. For an additional charge, you can have his stamp of approval on your engineering document. If you are from another state, our architect will work with an architect in your locale.

## Referrals

If you are willing to show your dome to other interested customers, Pacific Domes offers a free air-chair with any sale referred. If we have an interested customer in your area, we may call you for permission. We would then put you in contact with the customer so that you may arrange a meeting.

## Newsletter

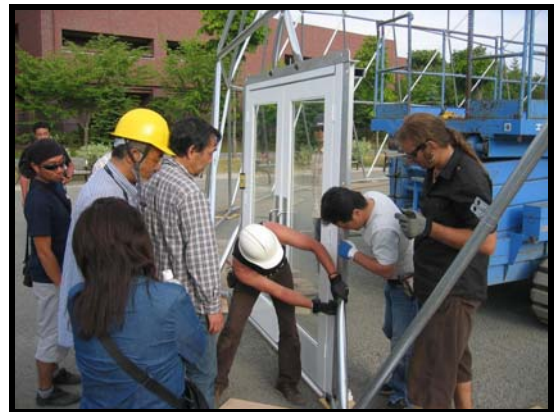
Pacific Domes offers a free air-chair for photography and a story about your dome experience. We love photos of interior and exterior innovations and unusual uses. We will send the newsletter via email to our interested customers as well as put it in the articles section of our website. If you would like to receive our monthly newsletter, please call us at (888) 488-8127 or send us email to [info@pacificdomes.com](mailto:info@pacificdomes.com) with your request.

# Frame Construction Overview

## CAUTION

Before assembling your new Pacific Dome Frame, please read and become familiar with all of the important information presented in this manual. Please contact our office with any questions or concerns regarding your individual setup requirements.

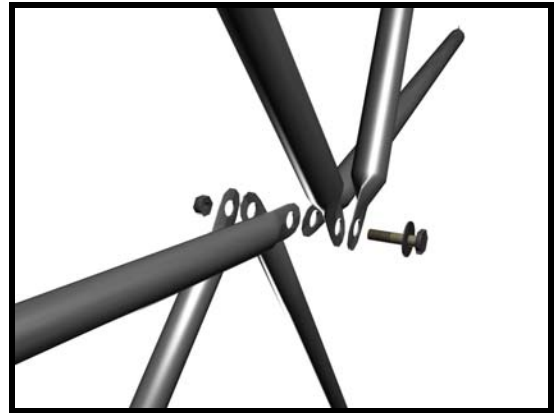
- ⚠ Clearly mark and cordon off the construction site, as per OSHA regulations. Inspect the site and flag any potential hazards, such as sprinkler heads and gas lines. Maintain a watchful eye for trespassers; people will inevitably want to walk up and talk about the dome!
- ⚠ Always wear hard hats when working around and underneath the **Frame**. Always use adequate hearing and eye protection when operating impact wrenches. Exercise particular caution when driving **Anchor Stakes**. **Strut** ends may be sharp; be careful when handling!
- ⚠ Never climb on any **Frame** until the entire structure is completely assembled. Once finished, climb the **Frame** only as necessary – **Struts** can be slippery, especially in wet conditions.
- ⚠ Always completely secure the **Frame** with approved anchoring methods. Never attempt to install any **Cover** without first properly anchoring the **Frame**. Failure to perform these procedures can cause damage to the **Dome** and may result in serious injury.
- ⚠ Good crew coordination and communication is **key** to maintaining a trouble free installation. Clearly assign roles for each crew member before beginning. Designate one person to supervise and direct the installation. In the event of an emergency, it is critical that the entire crew respond quickly to maintain control of the **Frame**.
- ⚠ There are a number of different methods that can be used to construct your **Frame**. The procedure that follows is our best and safest recommendation. If you choose an alternative setup method please keep safety in mind and be advised that **Pacific Domes** will not be held liable for damages or injury that may occur.



# Frame Construction Overview

## Recommendations

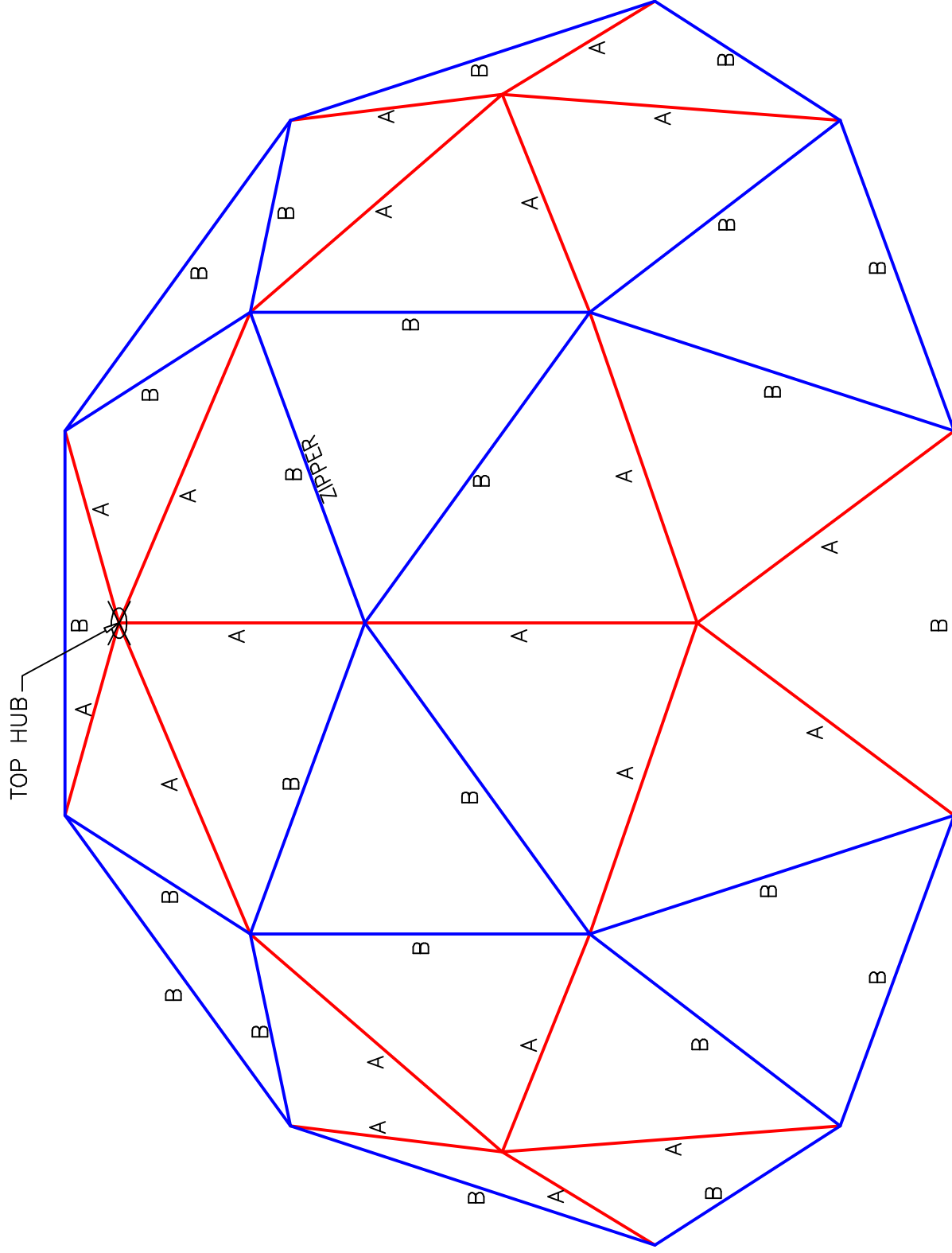
- Become completely familiar with the **Frame Diagram** before attempting any construction. It is critical that all **Struts** are correctly placed on the **Frame**.
- Reference your **Packing Slip** and verify that all parts of your **Dome Package** are accounted for. Stage your materials where they will be easily accessible during setup.
- Avoid confusion by making sure that all **Struts** are laid out and sorted correctly by like size. Color coding the outside of your Strut ends can be useful for identifying.
- Every **Strut** is stamped at one end with a number and letter code that identifies the **Dome** model and particular **Strut** lengths.
- Assemble the **Frame Bolts**, **Large Washers** and **Locking Nuts** into complete sets before beginning. Reserve all **Small Washers** for use in the bottom row of hubs only.
- Make sure that all **Strut** ends are always bent to face in towards the center of your dome. Improperly bent **Struts** will be more difficult to bolt together.



## Hub Assembly

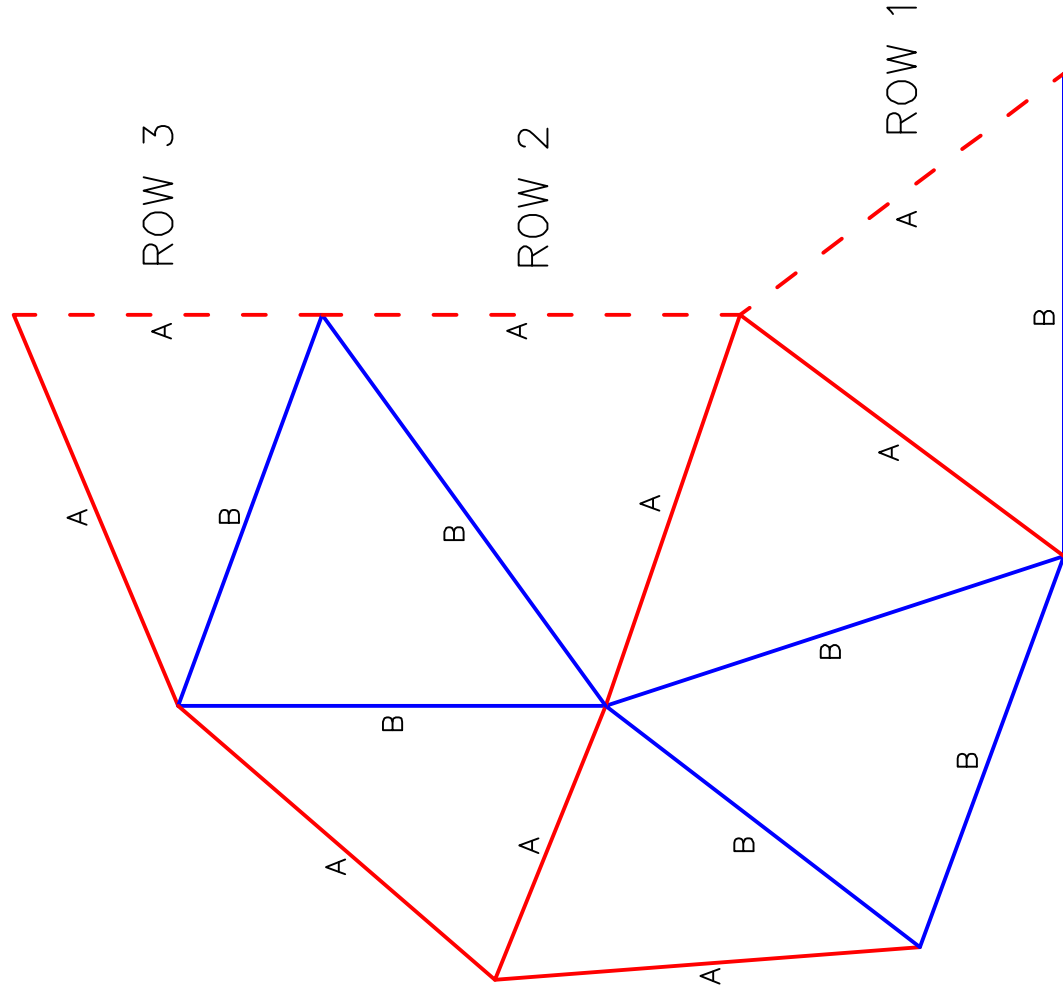
- For maximum strength and stability, always assemble **Hubs** in the order shown at right.
- **Vertical Struts** will always start on the inside of a Hub and end on the outside.
- **Horizontal Struts** will always be sandwiched in the middle of a **Hub**.
- It is helpful to have two people working as a team, as shown at right.
- Be careful to avoid pinching your fingers when assembling the **Hubs**.
- The angle at which you hold each **Strut** during assembly will directly affect the amount of exposed thread surface available for installing the **Nut**.
- Watch to make sure that completed Hubs do not pop inward during assembly.
- If a **Hub** does pop - loosen the **Nut**, push the **Hub** back out and retighten the **Nut**.





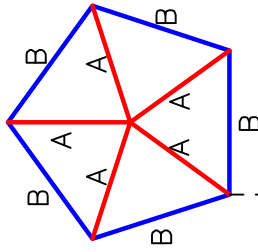
16' DOME FRAME DIAGRAM



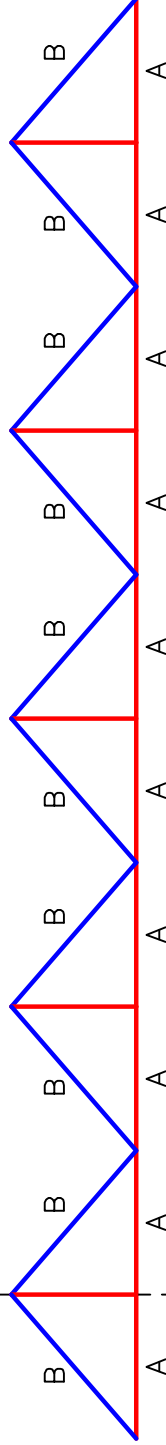


16' DOME FRAME DIAGRAM  
 THIS PATTERN REPEATS ITSELF FIVE TIMES.  
 NOTICE THAT THE OUTSIDE EDGES OVERLAP.

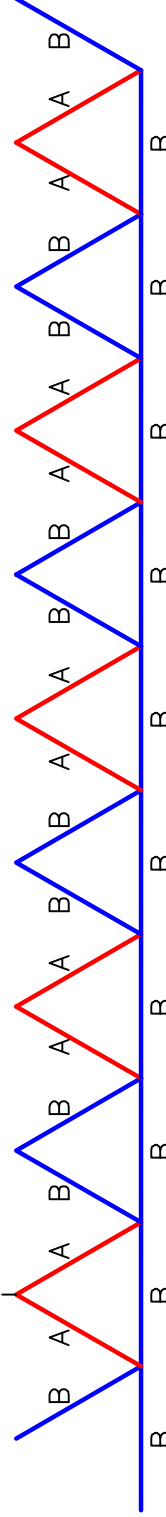
# 16 FOOT DOME FRAME – ROW BY ROW



TOP:



SECOND ROW:



FIRST ROW:

# 16' Dome Frame Instructions

## Bottom-Up Assembly

1. Temporarily nail a scrap wood to each face of the perimeter boards to help keep frame in place.
2. Begin by bolting the base (horizontal struts) and sides (semi-vertical struts) of Row 1 together. There will be four strut ends at each bolt, and there will be 15 bolts.
3. Add the base of Row 2 to the apex of Row 1, bolting together loosely. There will be four strut ends at each bolt. There will be 15 bolts. You will need to prop up the part that you have done as you move around the circle. Once complete, this much will hold itself up.
4. Unbolt and add the sides of Row 2 to each of these bolts. Remember to add the struts that point upward to the outside of the bolt, and let them hang down until you add the base of Row 3.
5. Add the base of Row 3 to the apex of Row 2, bolting together loosely. There will be four strut ends at each bolt. There will be 15 bolts.
6. Unbolt and add the sides of Row 3 to each of these bolts. Add the struts that point upward to the outside of the bolt, and let them hang down until you add the base of Row 4.
7. Add the base of Row 4 to the apex of Row 3, bolting together loosely. There will be four strut ends at each bolt. There will be 10 bolts.
8. Unbolt and add the sides of Row 4 to each of these bolts. Add the struts that point upward to the outside of the bolt, and let them hang down until you add the base of the top pentagon.
9. Add the edge of the top pentagon to the apex of Row 5, bolting together loosely. There will be five strut ends at each bolt. There will be 5 bolts.
10. Unbolt and add the five center 'A' struts to these bolts, sandwiching them in between the other five struts (do not put them on the outside). This will enhance the integrity.
11. Bring the 'A' struts to the center and put in the last bolt at the peak.
12. Re-tighten all the bolts on the frame.
13. Proceed to Shelter Anchor Installation.





# 16' Dome Frame Instructions

## Top-Down Assembly

 **Strut ends may be sharp and can cause injury!**

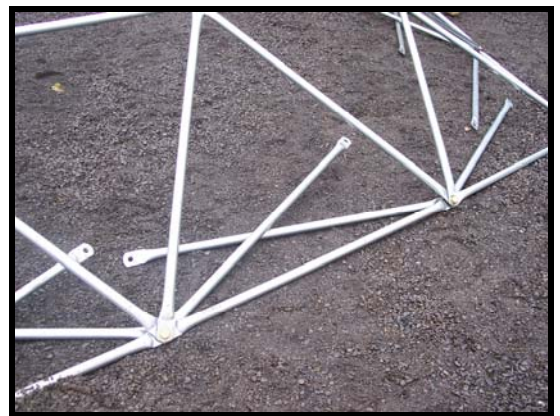
1. Start at the top of the dome, with the center pentagon. Place the 5 vertical "A" struts on one bolt. **Note:** all bolts will face towards the inside of the structure.
2. Complete the pentagon by adding the indicated 5 horizontal "B" struts. At this point, tighten the center hub completely, but leave the others just finger tight.
3. Lay out the next row of vertical struts and loosely connect to the underside of each pentagon hub.
4. Have one or two people lift the pentagon while another person shifts the loose struts down into proper position. Struts may swing down on their own, so **watch your fingers as you lift!**
5. Lay out and add the next horizontal row, leaving the hubs finger tight. The frame will now support itself.
6. With the frame now resting on the ground, fully tighten the last row of horizontal struts.

 **Do not climb on the dome frame until completely assembled!**

7. Lay out and loosely connect the next vertical row of struts into the bottom row of hubs. Verify correct placement before proceeding to the next step.
8. Lift the frame again. Struts will usually fall into place as the frame is lifted - be sure they remain in correct order. Make sure that the struts do not cross over each other as you set the frame back down.
9. Lay out and add in the next horizontal row of struts, leaving each hub finger tight. The frame will again support itself.
10. With the frame now resting on the ground, fully tighten the newly completed row of hubs.
11. Repeat steps 7-10 until you reach the bottom strut row and the frame looks like the picture at right.

 **Use proper lifting methods when raising the dome frame!**

12. Lay out the last horizontal strut row - **Do not bolt in place yet!**
13. Proceed to **Anchor Plate Installation**.





# Shelter Anchoring Instructions

## Anchoring Options

**\*\*Pacific Domes will not be held responsible for improper installation\*\***

Our **Frame Brackets** (included with any **Basic Dome Package**) are designed for quick installation on wooden floors and perimeter boards.

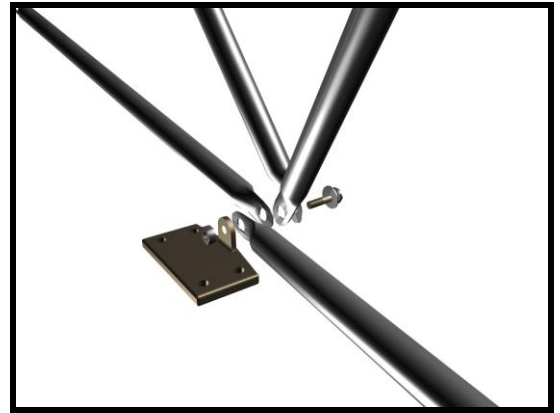
- Our **Anchor Plates** are optionally available (included with any **Deluxe Dome Package**) and provide for permanent installation on wooden and concrete flooring surfaces.

## Frame Bracket Installation

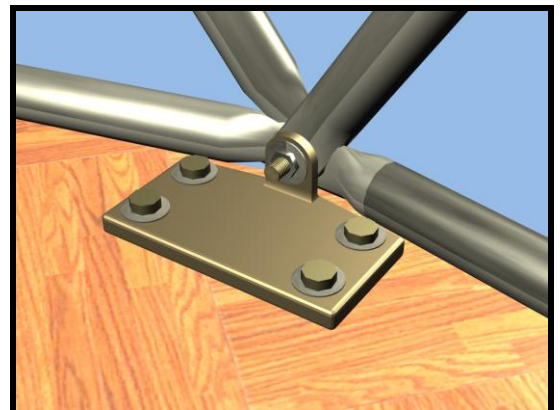
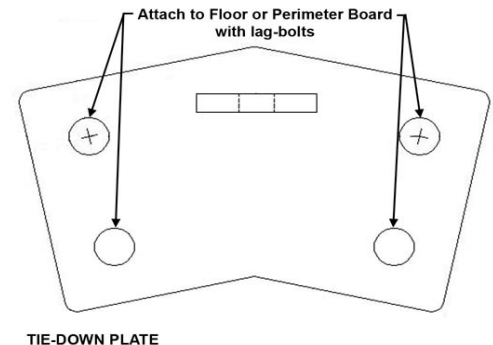
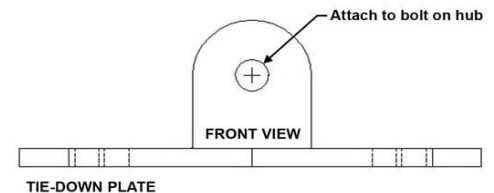
1. Center your completed **Frame** upon a wooden flooring system of your choice.
2. Locate the **Frame Brackets** and **Deck Screws** provided in your **Dome Package**.
3. Place two **Frame Brackets** over every **Strut**, 2-3" away from each **Hub** and secure with **Deck Screws**.
4. Proceed to **Cover Installation**.

## Anchor Plate Installation

1. Center your completed **Frame** upon a wooden flooring system of your choice.
2. Locate the **Anchor Plates**, **Lag Bolts** and **Small Washers** included with your **Dome Package**.
3. Install an **Anchor Plate** on the inside of every **Hub**, as shown at right.
4. Make any final adjustments to the placement of your **Frame**.
5. Pre-drill holes for the **Lag Bolts** with a **1/8"** or **3/32"** bit, depending on the surface material.
6. **Anchor Bolts** will require a **3/16"** wrench or socket driver.
7. Install a **Lag Bolt** and **Small Washer** in each hole on every **Anchor Plate**.



### Anchor To Deck



# Cover Installation Overview

## CAUTION

Before installing your new Pacific Dome Cover, please read and become familiar with all of the important information presented in this manual. Please contact our office with any questions or concerns regarding your individual setup requirements.

- ⚠ Clearly mark and cordon off the construction site, as per OSHA regulations. Always wear hard hats when working around and inside the **Frame**. Always use approved fall protection when climbing on the **Frame**.
- ⚠ Always properly secure the **Cover** with approved tie-down methods. Never attempt to install a **Cover** without first properly anchoring the **Frame**. Failure to perform these procedures can cause damage the Dome and may result in serious injury.
- ⚠ Always be cautious during bad weather conditions; the **Cover** will be much heavier and harder to handle when wet. Climb the **Frame** only as necessary – frame tubing can be slippery, especially in wet conditions.
- ⚠ Exercise caution – dangerous wind gusts can strike with little warning. We do not ever recommend installing the **Cover** in high winds. If weather conditions suddenly become poor, use your best judgment to determine whether to cancel or proceed with the installation. Try work with the wind - this will minimize any billowing effect and potential for losing control of the **Cover**.
- ⚠ Keeping the **Cover** clean means keeping it off the ground. Always use new or very clean tarps and avoid dragging the fabric as much as possible. We recommend removing your shoes before walking on a tarp to unfold the **Cover**.
- ⚠ Good crew coordination and communication is key to a trouble free installation. Clearly assign roles for each crew member before beginning. Designate one person to supervise and direct the installation from inside the **Frame**. In the event of an emergency, it is critical that the entire crew respond quickly to maintain control of the **Cover**.
- ⚠ There are a number of different methods that can be used to install your **Cover**. The procedure that follows is our best and safest recommendation. If you choose an alternative setup method please keep safety in mind and be advised that **Pacific Domes** will not be held liable for damages or injury that may occur.





# Shelter Cover Instructions

## Cover Installation

1. Using the strut diagram, locate the first tie location for the main skin.
2. Unroll the skin into a long, thin strip with the door facing the frame. If necessary, lay down a tarp to keep the skin from getting dirty or damaged.



**The cover is folded inside out!**

3. With a number of people, lift the skin up the frame and tie into position on the indicated hub. Maintain good hold on the skin, as one tie may not support the entire weight.
4. Unfold the skin outwards and secure two more ties along the roofline. The skin will now be covering approximately half of the dome frame.
5. Find the center of the top layer of fabric, at the hem near ground.
6. Gather a section of the top layer and fold over a tennis ball or similar object to prevent damaging fabric.
7. Tie rope securely around the gathered fabric. Large skins may require two ropes.
8. Throw the rope over the top of the dome frame.
9. Designate 2-3 people to pull each rope while the rest help push the skin up the frame.
10. Carefully pull the top skin layer over the frame until it is right side out and slides into position. Several people should help adjust and guide the fabric until it slips down into place.



**Make sure the window frames don't get caught on the hubs!**

11. Secure the two remaining ties at the roofline.
12. Adjust and pull the dome skin down until all seams line up evenly with the struts. The main cover is now in place.
13. Lift the roof panel into place and unfold completely, making sure to line up the corners.
14. From inside the dome, begin securing the roof zippers. Each face of the roof has two zippers that start from the center of the face.
15. Reaching under the roof panel to the outside of the main cover, smooth down and secure the Velcro patches on the flaps as you work the zippers closed.
16. Continue until the roof is completely zipped in place.
17. Settle the dome skin into final position, making sure it sits evenly around the base.
18. Proceed quickly to **Bay Window Installation**.



# Shelter Cover Instructions Cont.

## Bay Window Installation

**⚠ The Bay Window vinyl is delicate - treat with care!**

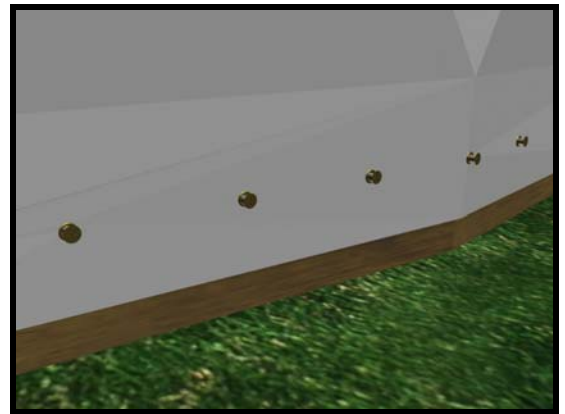
1. Lay down a clean tarp and completely roll out the bay window.
2. Position people inside and outside the dome and carefully lift the window into place.
3. Line up the center of the bay window with the center of the opening in the cover and start both zippers.
4. Working out from the center, close the remaining zippers and proceed to **Tie-Down Procedure**.



## Tie-Down Procedure

**⚠ Work quickly - the cover is unsecured!**

1. Locate the package of 1½" grommet screws provided in your hardware box.
2. Every grommet on the hem must be securely fastened to the side of your decking.
3. Pull down the skin as tight as possible in the area where you are working.
4. Start each screw at a slight downward angle then bring down and drive straight in to desired depth.



## Window Installation

**⚠ Do not unnecessarily force the fabric or bend the steel hoop!**

1. Locate the large fabric window bag or bags included with your shipment.
2. Using fingers or a shoe horn, install each window by working up and around the perimeter of the pocket until completely seated.
3. Smooth out any wrinkles and proceed to next window location.



## Door Installation

Each Pacific Dome comes standard with a completely removable, fabric door panel.

1. Each panel can be rolled up and secured with ties located at top of the door.
2. Each panel can be completely removed by using the horizontal zipper located at top of the door.

If your dome includes the optional opening for a pre-hung house door, please proceed to **Pre-Hung Door Installation**.





# Stove Setup

**OBSERVE ALL INSTALLATION SPECIFICATIONS FROM THE APPLIANCE MANUFACTURERS INCLUDING CLEARANCE TO COMBUSTIBLES. CONSULT A LOCAL PROFESSIONAL STOVE INSTALLER AND OBSERVE LOCAL REGULATIONS.**

Place your wood stove on a non-flammable hearth. The hearth can be made of flat rocks, bricks, or paver blocks with a metal or wood strip perimeter. Provide hearth material around the area beneath the door to the stove.

Place sections of interior chimney (Selkirk DSP Smoke Pipe or similar) on the wood stove up to a point 6" below the bottom of the hole in the skin.

Place an adapter (Selkirk 6T-DSAC or similar) atop the interior stove pipe.

Place a section of exterior, "low-clearance to combustibles" chimney (Selkirk Sure-Temp HT or similar) through the stove struts if supplied, and onto the adapter.

Slide the roof flashing (Famco SP or similar) over the section of exterior stove pipe. The roof flashing supplied by Pacific Domes is formed for the steep angle of the dome face and cut round by the Famco fabricators then edged-finished by technicians at Pacific Domes.

Insert the SP flashing into the sleeve of the dome skin.

Install a storm collar (Selkirk SC or similar) on the exterior stove pipe, above the roof flashing. Caulk the top of the storm collar with hi-temp caulk.

Install additional exterior stove pipe to a height 24' above any part of the structure within 10'.

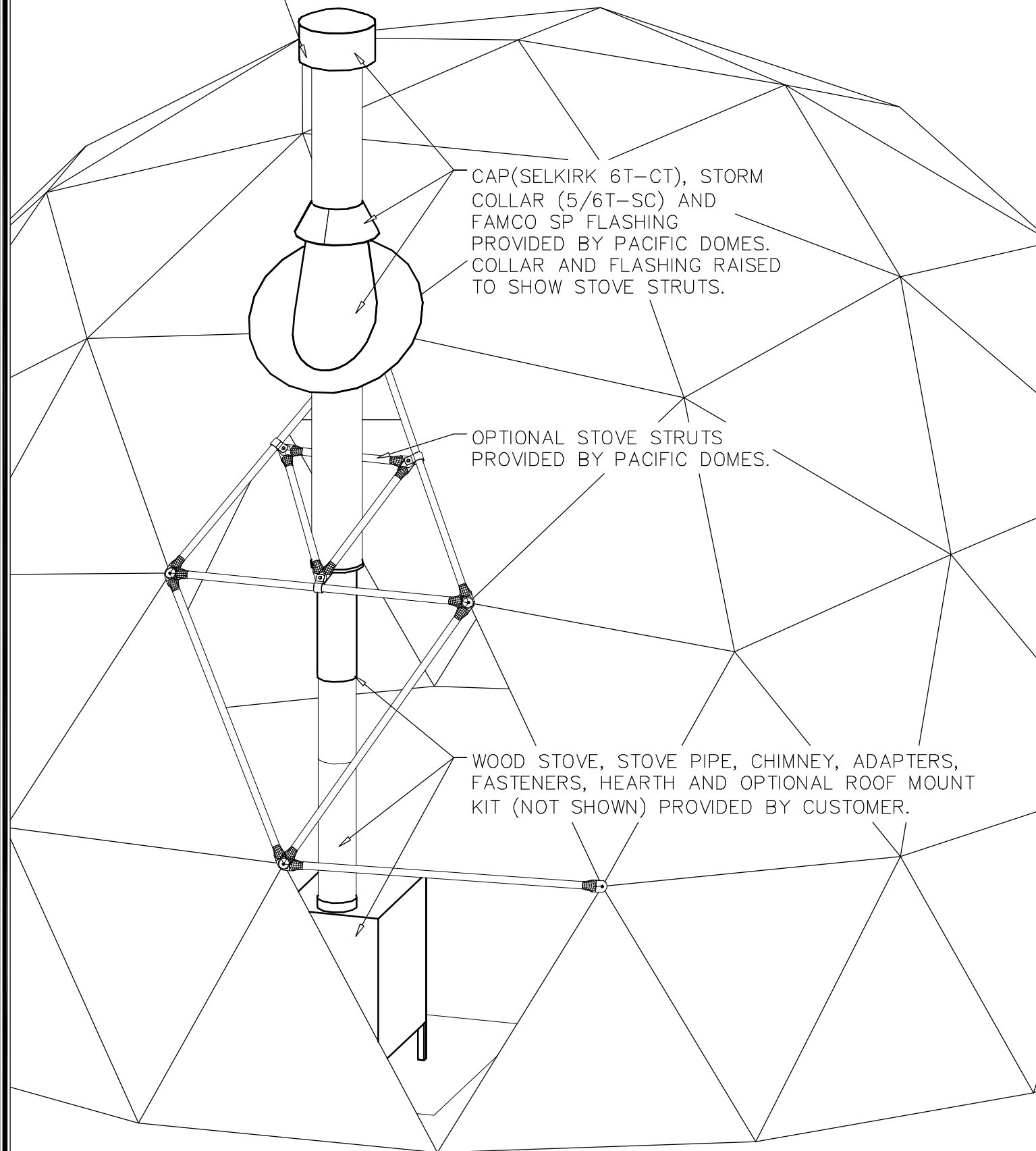
Install a cap (Selkirk CT or similar) atop the exterior stove pipe.

Secure all chimney connections with locking bands (Selkirk LB or similar) or screws. Secure the chimney at the dome frame with guy wires to the optional stove struts or to the adjacent dome struts or the with additional guy wires as required. A roof mount kit (Selkirk RSK or similar) or wall band (Selkirk 6T-WB or similar) may be used for additional support.

See STOVE SETUP Diagram.

STOVE CAP TO BE  
24" ABOVE ANY PART  
OF STRUCTURE WITHIN  
10 FEET HORIZONTALLY.

**OBSERVE ALL INSTALLATION SPECIFICATIONS FROM THE APPLIANCE  
MANUFACTURERS INCLUDING CLEARANCE TO COMBUSTABLES.  
CONSULT A LOCAL PROFESSIONAL STOVE INSTALLER AND OBSERVE  
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20' DOME SHOWN - OTHERS SIMILAR

PACIFIC DOMES

DRAWING NAME:

STOVE SETUP

DRAWING NUMBER:

SI-00-14

DATE:

02 DEC 2008

DRAWN BY:

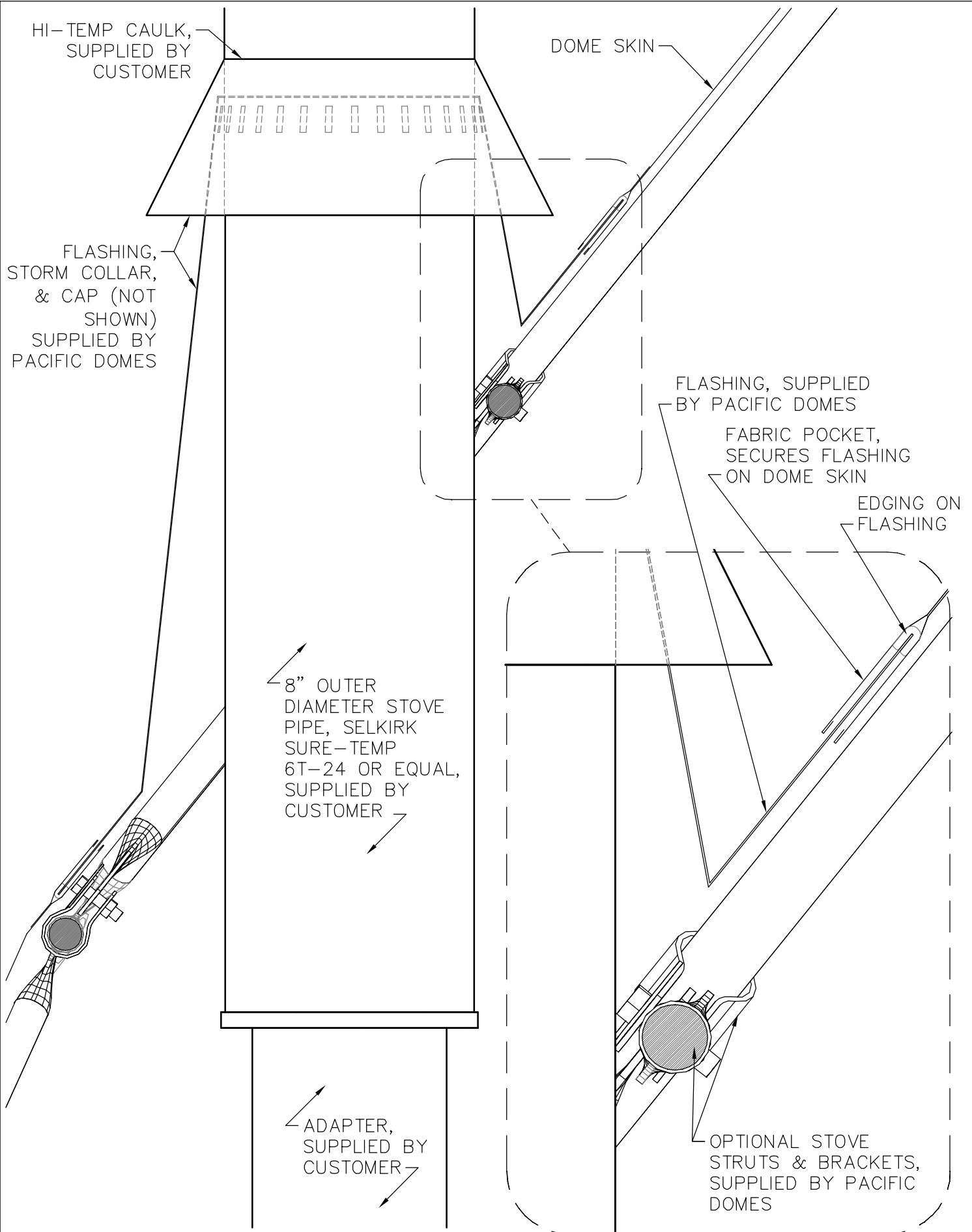
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STOVE SETUP

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SI-00-14

DATE:

02 DEC 2008

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2 OF 2

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# Solar Fan Instructions 16'

## Solar Fan Assembly

 **Disconnect the power leads before installing the fan!**

1. Locate the optional **Solar Fan** included with your dome package and read all instructions.
2. Determine the best angle at which to set the collector panel and bring legs into position.
3. Carefully screw the legs into the **Groove** located on the sides of the aluminum rails that border the collector panel. Be careful to not screw directly into the panel!



## Solar Fan Installation

 **Be careful not to drop Solar Fan during installation!**

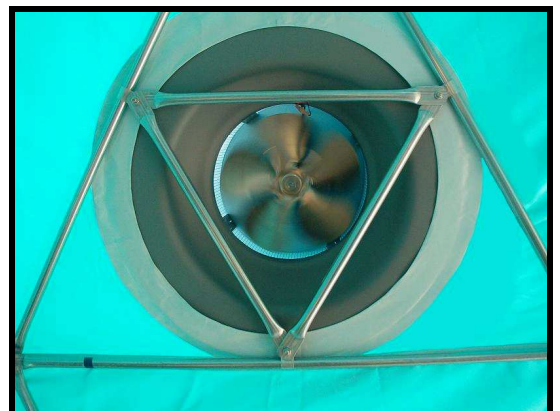
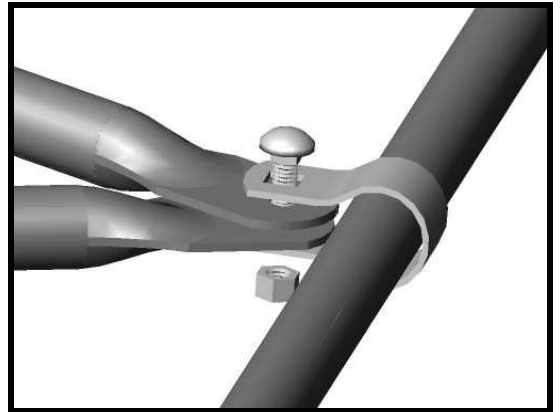
1. Determine **Solar Fan** placement.
2. Have one person support the **Solar Fan** while the other completes the following steps.
3. Using fingers or a shoe horn, install the **Solar Fan** in an upper **Round Window** opening.
4. Work up and around the perimeter of the pocket until the **Solar Fan** is completely seated.



## Fan Strut Installation

 **Do not connect power leads until the Fan is completely installed!**

1. Locate the 3 short **Fan Struts** marked "C".
2. Locate the **Fan Clamps** and bolts included in your **Hardware Box**.
3. Place the **Fan Clamps** onto each of the surrounding struts, as shown right.
4. Make sure that the round hole in each **Fan Clamp** is facing to the inside of the dome.
5. Place two **Fan Strut** ends in a **Fan Clamp**.
6. Install the bolt from the back side of the **Fan Clamp**, so that the square lip locks in place properly.
7. Install the nut and make finger tight.
8. Repeat steps 5-7 until all **Fan Struts** are in place.
9. Center each **Fan Clamp** on the surrounding struts and fully tighten all bolts.
10. Connect the power leads, located on the housing near the fan blades, and enjoy!





# Insulated Liner Instructions

## Liner Installation

 To avoid stains, do not let Cover directly touch the ground!

- Your Pacific Domes Liner is made of extremely durable 100% Polyester. It is Flame Retardant, Water Resistant Fabric and is lightweight for ease of installation.
- It is easy to clean using soap and water, although heavy detergents may remove the fabric treatment.
- You can paint your liner using Acrylic Paint for Aesthetic enhancement.
- The liner is tied to the frame and will hang inward creating an air space between the main skin and the liner with the frame in between.
- Begin at the very top with the roof liner. Tie the first tie at the top center Hub of the Dome and work your way down, adding the insulation triangles as you go.
- Roll the insulation into a tube and insert it into the slits on the outside of your liner matching the letters as you go. Tuck the insulation into the points of the triangle by reaching your hand inside the slit.
- Tie each of the ties provided. There are ties for each hub of the frame as well as for the center of each strut.
- Do not put the insulation in before you tie the liner to the frame as it may become too bulky and heavy.
- To secure the liner around the woodstove flashing, use the paper clips provided to attach the liner to the fabric pocket that the flashing is located in.



# THERMOSHIELD: Insulative Paint

Thermoshield's Tropical Roof Coat is an elastomeric isolative paint. It contains hollow ceramic bubbles, which have been used on the space shuttles to protect against extreme outside temperatures. We recommend Thermoshield in areas with extreme exposure to sun.

## **The advantages are:**

- Excellent insulation
- Extends the life of the fabric
- Protection against ultraviolet light
- Good fire resistance
- Dirt resistant, easy to clean, remains pliable-you can roll up your dome!
- Waterproofing-lasts for 5 years with a good coat
- Mildew resistant
- Non-toxic in liquid and cured state

**Please Note:** Thermoshield will reduce light penetration.

## **Thermoshield Exterior Application Instructions:**

Apply Thermoshield paint on a dry and preferably sunny day. The air temperature should be 50° F or warmer.

## **You will need the following things on hand:**

- An appropriate amount of Thermoshield for your size dome
- Some 3M blue tape and thin plastic sheeting (enough to mask all your windows)
- An airless sprayer (with 3000 psi) that pumps **at least .66 gallons per minute**, and a nozzle with an **orifice size between .0021 and .0026** (*please note:* sprayers with these specifications are not available from all rental companies. It may be necessary for you to hire a professional painter with the appropriate equipment. Tell them that Thermoshield is an elastomeric paint and inform them of these sprayer requirements). Brushes or rollers will also work.
- A sufficient size ladder

1. If your dome is dirty, clean it using a power nozzle and/or a mild soap solution and a scrub brush. Clean the window pockets well. If your dome has mildew on it, use a strong bleach solution to kill it (one part bleach to four parts water). Hose the fabric thoroughly to remove all the bleach salts so the bleach doesn't weaken the fabric. **Be sure the fabric has dried thoroughly before applying Thermoshield.**

2. Tape of bay window with the tape and plastic sheeting. Remove the round windows, cover them with plastic sheeting, and reinsert them with the plastic sheeting facing out.

3. Zip up the door and thoroughly check the door, the base screen, and the roofline to make sure that no zippers or Velcro is exposed.

**4. Do not add water to Thermoshield. Also, remove ALL screens and filters from the sprayer and the nozzle.** The ceramic bubbles in Thermoshield are a key component of the paint, and may get caught in fine filters and clog the sprayer.

**5.** Use the circles of fabric that your dome frame came packed in to practice your spray stroke and to test the consistency of the sprayer.

**6.** Using the paint sprayer, apply several thin, even coats of Thermoshield to the exterior of your dome. Allow each coat to dry to the touch before you apply the next coat.

**7.** To paint the roof, open one of the corners of the roof. Put a ladder inside the dome below the open corner. Stand on the ladder with your upper body outside the dome. Paint as much of the roof as you can reach. Repeat through other corners until the whole roof is painted. Zip up the roof immediately after painting.

**Do not remove the roof to paint it with Thermoshield. The paint will shrink the fabric as it dries, making it very difficult to put the roof back on.**

**8.** Separate the round window flaps with toothpicks. Apply several thin coats inside the window flaps. This protects the fabric from any dirt that collects inside the window casing.

**9.** Flip up the bottom of your dome and apply several thin coats to both sides of the bottom hem of your dome skin four". This will protect it from ground dirt.

**10.** If Thermoshield gets on the vinyl window you can remove it with alcohol or Goof Off.

**11.** Thermoshield will quickly dry to touch in warm weather but will take a couple days to fully cure.

We recommend that you do not roll or brush on Thermoshield because you will see uneven strokes when light shines through the dome skin. In our opinion it looks bad when applied with a brush or a roller. Thermoshield will change the esthetics of your dome. Pacific Domes is not responsible for the outcome of your paintjob.

Thermosheild paint is recommended in areas with extreme UV. It will reflect the 99% of the UV off the dome, keeping the dome cooler and extending the life of the fabric.

Orienting the bay window away from the sun, or using a Pacific Domes curtain will prevent heat build up through the clear vinyl. Attaching the curtain to the exterior will protect the vinyl from UV exposure as well.

# Care and Maintenance

- Keep your **Dome Cover** clean! Even on mildew resistant fabric, mildew can grow on accumulated dirt or foreign materials which remain on the top or bottom surface and eventually damage or stain the fabric. **Pacific Domes** cannot be responsible for such damage.
- Hose down your **Cover** with clean water occasionally, every month or so. We recommend that you do this on a hot, sunny day.
- Wash down your **Dome Cover** if it becomes dirty. Use a mild soap and brush lightly with a cloth or soft brush if necessary. Make sure to rinse thoroughly and immediately.
- Do not wash your **Dome Cover** with any harsh or strong solution, or scrub too vigorously with an abrasive cleaner – this can damage the fabric.
- Do not scrub your **Bay Window** – dust and dirt can scratch the clear vinyl. To clean, rinse the window thoroughly then wipe with a soft cloth and Windex. Always wipe horizontally to best camouflage any potential scratches.
- To remove minor scratches and hazing on your **Bay Window**, use a restorative product such as **Diamondite**. For best results, always follow individual manufacturer's directions for use.
- Keep shrubbery and vines away from the **Dome Cover**, as many bushes contain an acid which can be harmful to your fabric.
- Do not allow water or snow to stand on the **Dome Cover**, this can cause pocketing and possible stretching of the fabric.
- Do not overlook small rips or tears. If a sharp object punctures the fabric, repair immediately to prevent further damage.
- If at any time you notice rust forming on your **Dome Frame**, treat immediately with a steel brush and application of a metal preservative.

## Storage

- Do not store the **Dome Cover** when damp or wet. Mildew can grow on any damp surface and may permanently stain the fabric.
- Do not store **Dome Cover** in freezing temperatures as clear window vinyl may become brittle and can be damaged if moved.
- Always store the **Frame** and **Cover** off the ground to prevent potential moisture damage, which can lead to frame rust and fabric rot.

## Repair

- For small holes in your fabric or clear vinyl, use a dab of clear silicone caulk on both sides of the fabric.
- For rips or tears, apply **Tear-Aid** fabric repair tape to the inside and outside. Burnish the tape into the fabric to make a watertight seal.
- Bent frame struts can be bent back and reused if the tubing has not been creased. Replacement struts can be ordered from **Pacific Domes**.
- In the event of major damage, please contact **Pacific Domes**.



# Water Proofing

**When your dome is fully assembled, test it for leaks, by letting it go through a heavy rain or thoroughly hosing it down before moving valuables inside.**

Pacific Domes is not responsible for water damage to property inside the dome. At Pacific Domes, we work very hard to make your dome completely watertight. We use fabrics that are water repellent. We apply hot tape over all the stitching of the dome to insure a watertight seal.

We have enclosed a tube of LEXEL caulk incase there may be spots that need additional sealing. Use this caulking on any trouble spots. Caulk the outside lip around the top half of the round windows and the lip above the door if necessary. The outside double row of stitching around the bay window may need caulking as well.

This caulk can be applied to the stitching on the outside of the skin, wet or dry. LEXEL can be applied in temperatures between 0 F – 120 F to surfaces free of oil, dirt, frost and loose matter. It may take several hours to be tack free, and 2-4 days to cure. The wetter the climate the longer it will take to cure.

LEXEL can also be used in repairs, as the glue between two pieces of fabric. Please feel free to call us with any questions at 1-888-488-8127, or call LEXEL directly at 1-800-289-7290.

## Mildew Prevention

To prevent mildew keep your dome well ventilated and dry. In extremely humid climates, where mildew is an issue, using a dehumidifier will prevent mildew. Keeping your dome clean is also essential. When storing your dome, make sure it is clean and dry.

### Treatment:

Sponge down all mildew areas with a strong bleach solution (1 part bleach to 4 parts water). Wear gloves and have your dome well ventilated to avoid inhaling fumes. Mildew will turn pale when it dies.

### Natural mildew treatments:

- One of our customers gave us this recipe as both a curative and preventative for mildew growth.
  - 2 ½ gallons water
  - 20 drops Tea Tree Oil
  - ¼ cup Borax
  - ½ cup white vinegar
- Spray mildew with hydrogen peroxide. Wash with a thin paste of lemon juice and borax to inhibit new mildew formation.
  - Hydrogen Peroxide
  - Lemon Juice
  - Borax
- Running a high-powered ozonator inside of your dome will destroy any mildew.

# Weather Considerations

## **Snow:**

If you live in an area of heavy snowfall we recommend that you have your dome frame engineered to meet your county's snow load requirements. If your dome has not been engineered we recommend that you knock the snow off before there is six inches of accumulation. Use a flat surface such as the end of a push broom so you do not puncture the frozen fabric. You can also place a support pole at the center of the dome if you are expecting heavy snow loads. Beware of heavy snow falling from tree limbs. We recommend that you do not leave your dome unattended over a winter of heavy snowfall.

## **Hail:**

Your dome will have no problem shedding small hail without any damage to the cover. If you live in an area where you get baseball-sized hail, let us know what happens to your dome. You may want to consider a more solid roof.

## **Extreme Winds:**

Pacific Domes are designed to handle extreme winds. One of our 20 ft. domes survived 130 mph winds in Hurricane Andrew. *It is important to properly secure your dome to the ground if you live in an area with extreme winds.* We offer earth anchors for domes in high wind areas. Please contact us if you think your dome may require additional anchoring. It is possible that your round windows could pop out in a very strong wind. As a precautionary measure you can poke three equidistant holes in the outside of your window pockets and tie a triangle of fishing line or string to hold in the windows. If above 130 mph winds are expected, we recommend taking the cover off the frame and storing it until the storm is over.

## **Lightning and E.M.F.:**

In 20 years, Pacific Domes has never heard of a dome being struck by lightning. If lightning is a concern in your area, ground your dome frame with a lightning rod.

It is important to ground your dome because it attracts stray electro magnetic frequency, such as radio and cell phone waves. This energy is put into the Earth when it is grounded, creating a "clear" field inside the dome, free of stray electromagnetic energy. This will also ground lightning. If you are in an area with frequent lightning, you may need two grounding rods.

Attach a line of thick (#6 or #8 gage), coated, copper wire from one of your bottom hubs to a 7 ft-long copper grounding rod, buried vertically into the Earth. (If you are in an area with rock, you may bury the rod horizontally). You can purchase a copper-grounding rod from Pacific Domes or from your local hardware store for less than 20 dollars.

## **Floods:**

To protect your dome from floods, you can build your deck elevated off the ground. Be sure that the footings are well cemented. Do not build your deck on the side of a cliff or mountain that could wash away in a flood.

## **Earthquakes:**

Your dome is a very safe structure to be in during an earthquake. If you live in a seismically active area, build your deck with a strong foundation. Do not hang anything from the dome frame that could fall and hurt you.

# Weather Considerations cont.

## **Extreme Sun:**

In most climates, the ventilation provided by using the screened areas of your dome, will keep your dome at comfortable temperatures. In extremely warm climates, a **Solar Fan** maybe necessary. In climates where the rain is intermittent, and there maybe the possibility of water coming into the screened areas, the solar fan will exhaust the hot air without rain entering. A Solar Fan can be purchased from Pacific Domes.

## **Extreme Cold:**

Using a heat source, a fan or vent to create airflow to circulate the heat and a winter-insulated liner can keep you warm in sub-zero temperatures. A stove cap and flashing, for venting a wood or gas stove, is provided with each dome. An insulated liner can be purchased for an extra charge.

## **Heavy Rain:**

Your dome should have no problems withstanding heavy rain. CanopyFS and Canopy Plus seams are welded or sealed with hot-tape to be waterproof. SunLite Domes are sealed with completely sealed with hot-tape. Lexel caulking is provided if you have any leaking problems.

## **Condensation:**

Condensation occurs when warm moist air meets a cold surface. The risk of condensation therefore depends upon how moist the air is and how cold the surface of the dome is. In a dome with cold outside walls, the temperature of which falls below the dew point temperature, it is quite normal for condensation to occur.

Condensation occurs usually in winter, because the dome cover is cold and because windows are opened less frequently and the moist air cannot escape. Cooking and water use inside the dome will help create condensation.

### **The below suggestions can help prevent condensation build up:**

- Airflow will help prevent condensation. Use a fan inside your dome.
- Ventilation will allow moist air to escape. Install a register in any of your lower window openings.
- Pacific Domes can provide a register on a fabric hoop that can be installed into your window opening upon your request.
- Use dry heat.
- Use a dehumidifier can be used in extreme conditions.
- Install a ventilation hood over your cooking area.

# **Dome Deck Methods**

Erecting the dome on a pre-existing deck can be problematic. Please contact us if you plan to do so. Also contact us if your dome has a pre-hung door placement that may require modifications to the deck outline.

Our shelter domes are designed with a hem that connects to the side of a raised deck, below the floor level. We suggest the following options for building decks to interface with our shelter dome hem:

## **1. Portable “Pie Piece” or “Star” Method**

The portable “Pie Piece” (16’, 20’, and 24’) and “Star” (30’ and 36’) methods allow the deck to be disassembled in sections and moved easily. You can take it apart, load it up and move it all in a day’s work. It costs a little more than the joist method and is more complex to build.

## **2. Stationary Joist Method**

This method requires less time and materials to build than the portable methods. We recommend a joist deck for people that don’t expect to move their dome. You can make this method semi-portable by using screws instead of nails.

## **3. Perimeter Boards**

We recommend this method for domes with earthen floors. The perimeter board will anchor your dome and keep the fabric off the ground. You can also use the perimeter board as a mold to lay tiles or pour concrete. Concrete floors can be painted beautifully. Coat the concrete with marine varnish for easy cleaning. If perimeter boards are used as forms for concrete, we recommend using pressure-treated, rot-resistant wood, and leaving the boards in place to receive the shelter hem. 16-penny, galvanized nails started into the inside of the perimeter boards will secure the boards to the slab.

# 16 ft. Dome Floor – “Pie Piece” Method

1. From 20 of the 10ft. boards, cut 20 “A” boards.  
From 10 of the 12ft. boards, cut 10 “B”, “C”, “D” and “E” boards.  
From 10 of the 8ft. boards, cut 20 “F” boards.

*NOTES:* All boards are measured on longest side.  
Angles are specified for saw settings.

2. Assemble the 10 pie piece frames with 16d galvanized nails, as per the drawing.
3. Level one pie piece frame on high side of land with center of pie pointing downhill. Place 1 ft. x 1 ft. x  $\frac{3}{4}$ ” pine or plywood on top of center post to support 10 pie pieces. Outer piers and posts may be about 6” from the B boards and will support two adjacent pieces.  
*NOTE:* The door goes on a point.
4. Set the second pie piece frame on the center post and one post of the first pie piece frame. Level the second piece and set the fourth pier and post for the other side.
5. Drill three holes through the adjacent “A” boards and bolt them together.  
*NOTE:* A C-clamp may be useful here.
6. Repeat the procedure, adding one more pier and post and bolting one more frame until all the piers are set, the posts are cut and the frames are bolted.
7. Cover with suitable decking.

Cut List	Amounts	Length	Materials	
<b>A:</b>	20	88 $\frac{3}{4}$ ”	<b>11</b>	<b>Wood-topped pier blocks</b>
<b>B:</b>	10	60 $\frac{7}{8}$ ”	<b>1</b>	<b>4 x 4 post to level</b>
<b>C:</b>	10	5”	<b>10</b>	<b>2” x 6” x 8 ft. fir</b>
<b>D:</b>	10	37 $\frac{3}{16}$ ”	<b>20</b>	<b>2” x 6” x 10ft. fir</b>
<b>E:</b>	10	26 $\frac{7}{8}$ ”	<b>10</b>	<b>2” x 6” x 12 ft. fir</b>
<b>F:</b>	20	45 $\frac{5}{8}$ ”	<b>30</b>	<b>5/16” x 3-1/2” hex bolts</b>
			<b>30</b>	<b>5/16” hex nuts</b>
			<b>60</b>	<b>5/16” washers</b>
			<b>10#</b>	<b>16d galvanized box nails</b>
			<b>10</b>	<b><math>\frac{3}{4}</math>” plywood</b>
			<b>15#</b>	<b>Deck nails or screws</b>
			<b>2 gal.</b>	<b>Marine varnish</b>

**\*All angles are 18°**





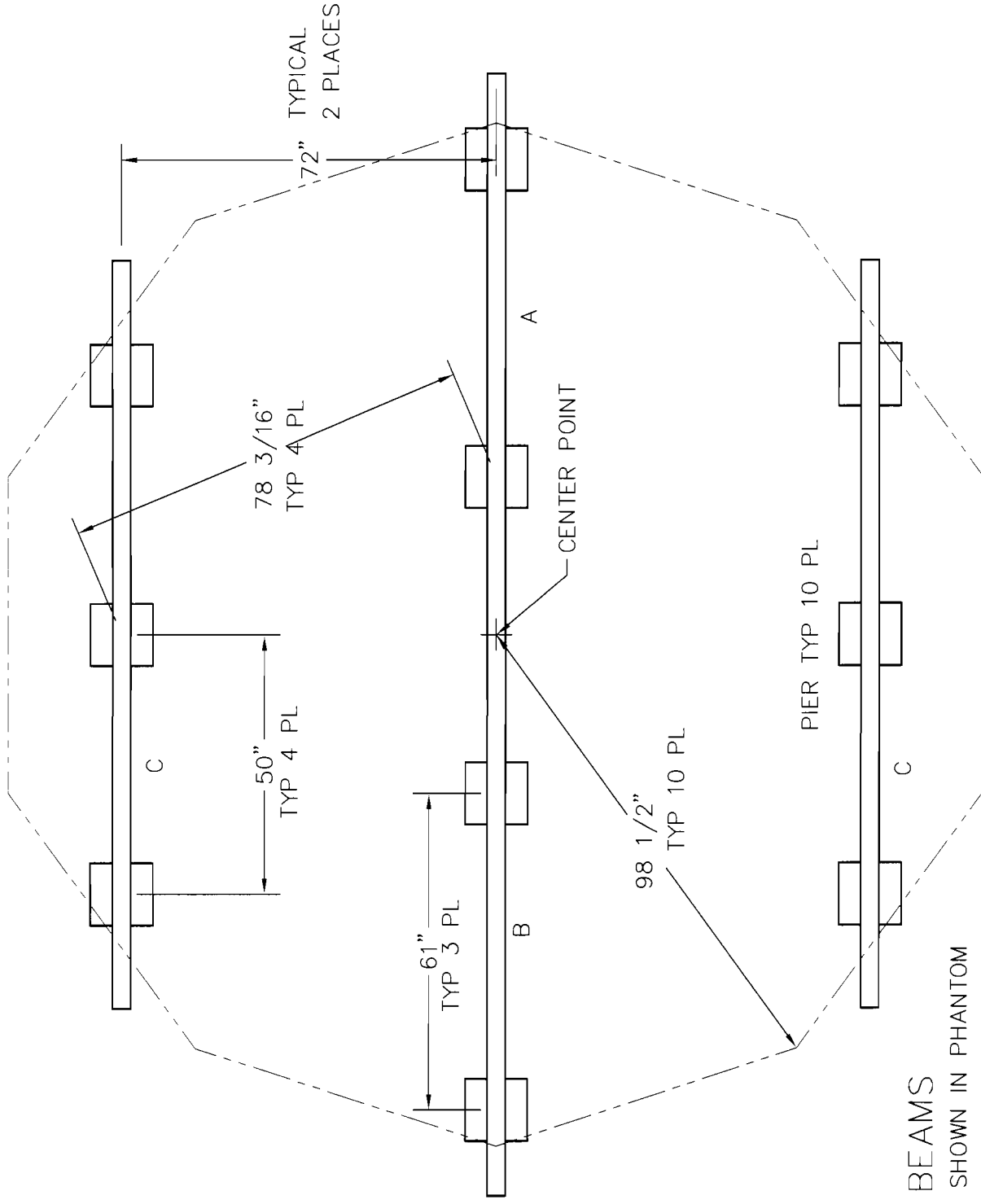
# 16 ft. Dome Floor – Joist Method

1. Lay out the 4x6 beams as per the drawing.
2. Level the beams with various lengths of 4x4 atop pier blocks. Nail or screw the posts to the piers and the beams to the posts.
3. Cut lengths of 2"x6" with designated angles from the cut list.
4. Nail or screw the joist and perimeter boards together.
5. Cover with suitable decking material.

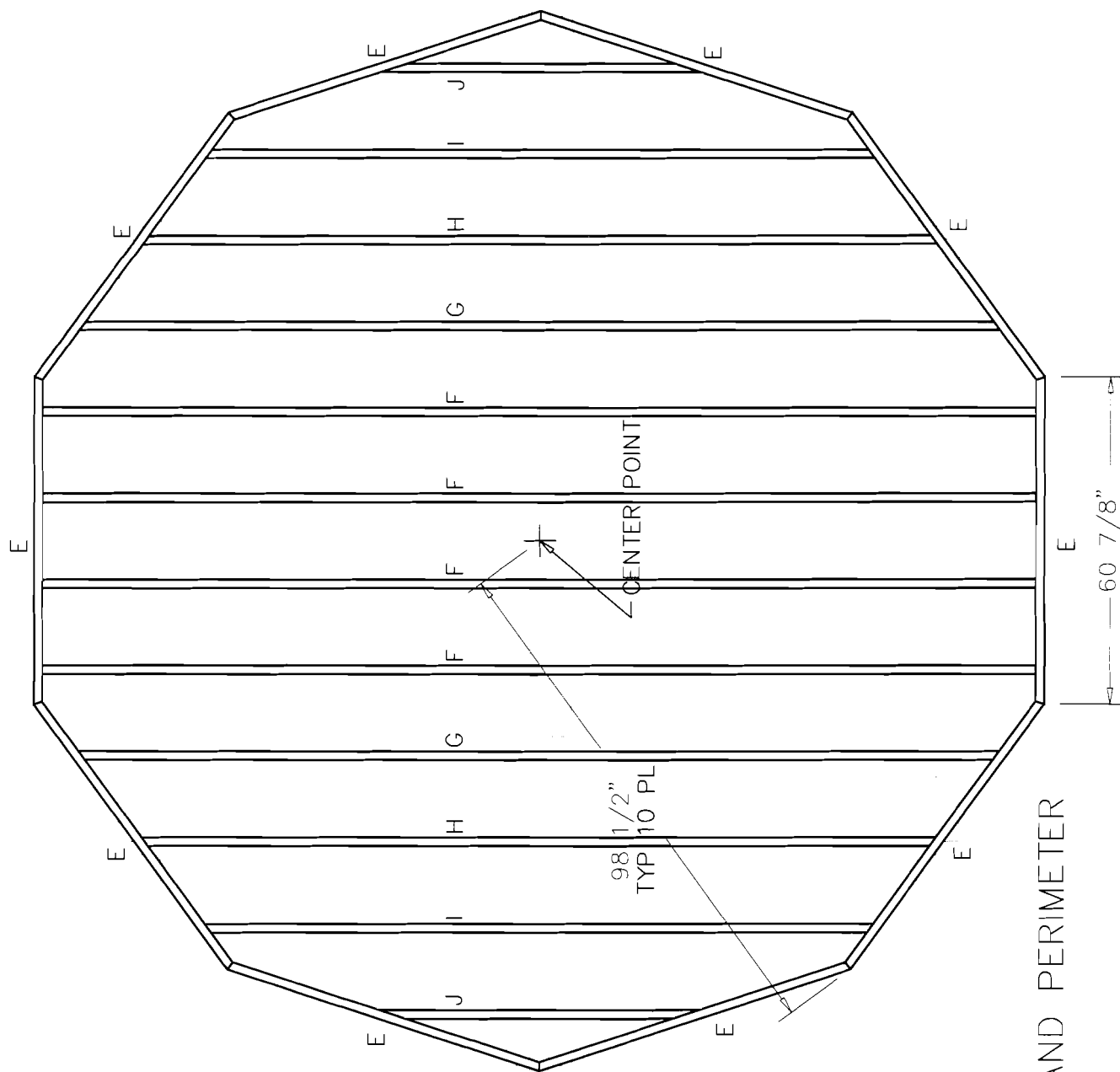
## Materials

10	Wood-topped pier blocks
1	4" x 4" post to level
1	4" x 6" x 16 ft.
2	4" x 6" x 12 ft.
10	2" x 6" x 16 ft.
5	2" x 6" x 12 ft.
10#	16d galvanized box nails
8	3/4" Plywood
20#	Deck nails or screws
2 gal.	Marine varnish

Cut List	Amounts	Length	Angles
E:	10	60 <sup>7/8</sup> ,"	18°
F:	4	184 <sup>1/4</sup> ,"	0°
G:	2	170 <sup>3/4</sup> ,"	36°
H:	2	147 <sup>1/2</sup> ,"	36°
I:	2	124 <sup>1/4</sup> ,"	36°
J:	2	59 <sup>5/16</sup> ,"	72°



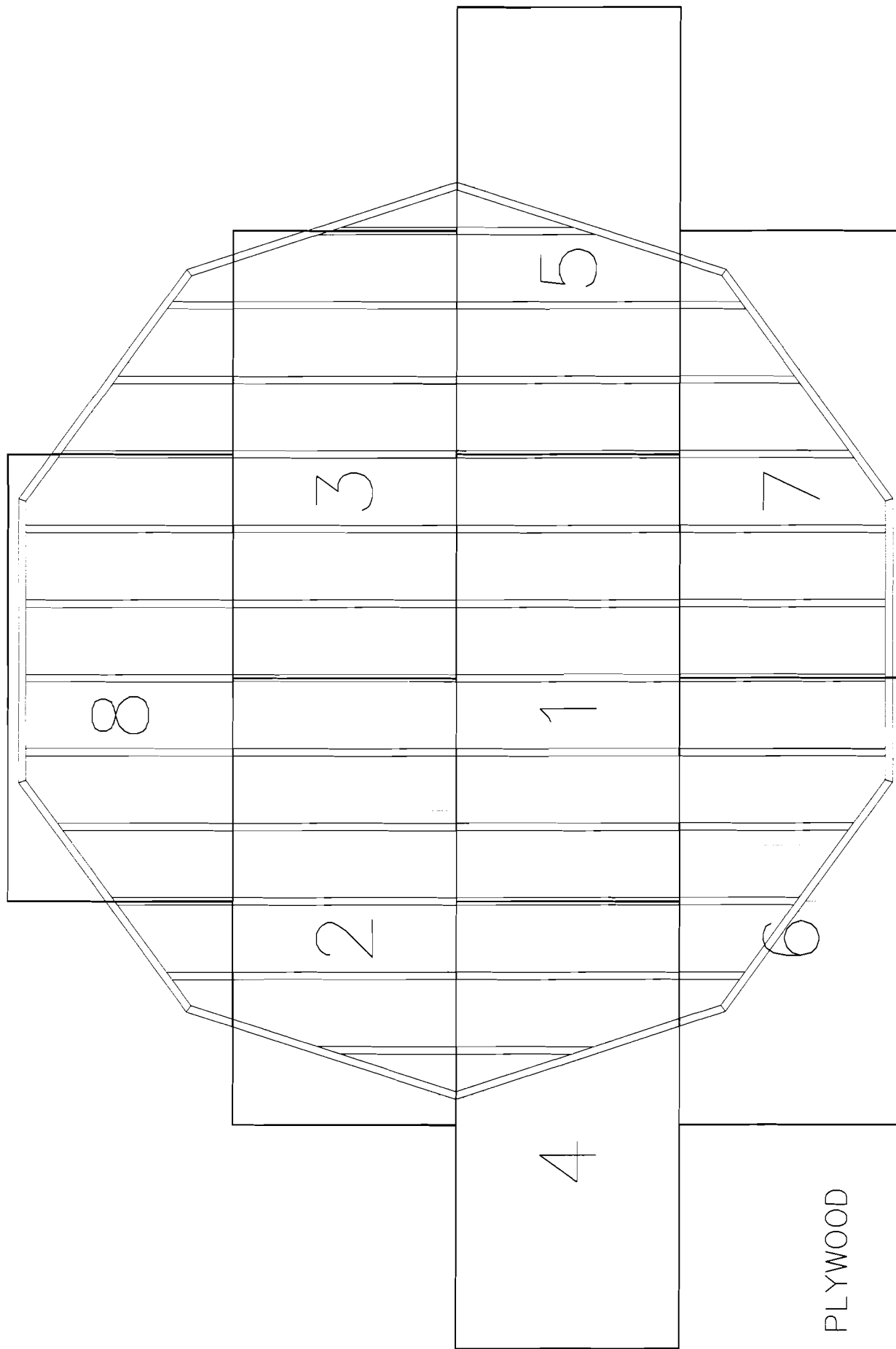
PIERS AND BEAMS  
JOIST PERIMETER SHOWN IN PHANTOM



JOISTS AND PERIMETER

PACIFIC DOMES	DRAWING NAME: 16' JOIST DECK	DRAWING NUMBER: SD-16-016	DATE: 6 JAN 2006	DRAWN BY: TES	PAGE: 2 OF 3	REV: A
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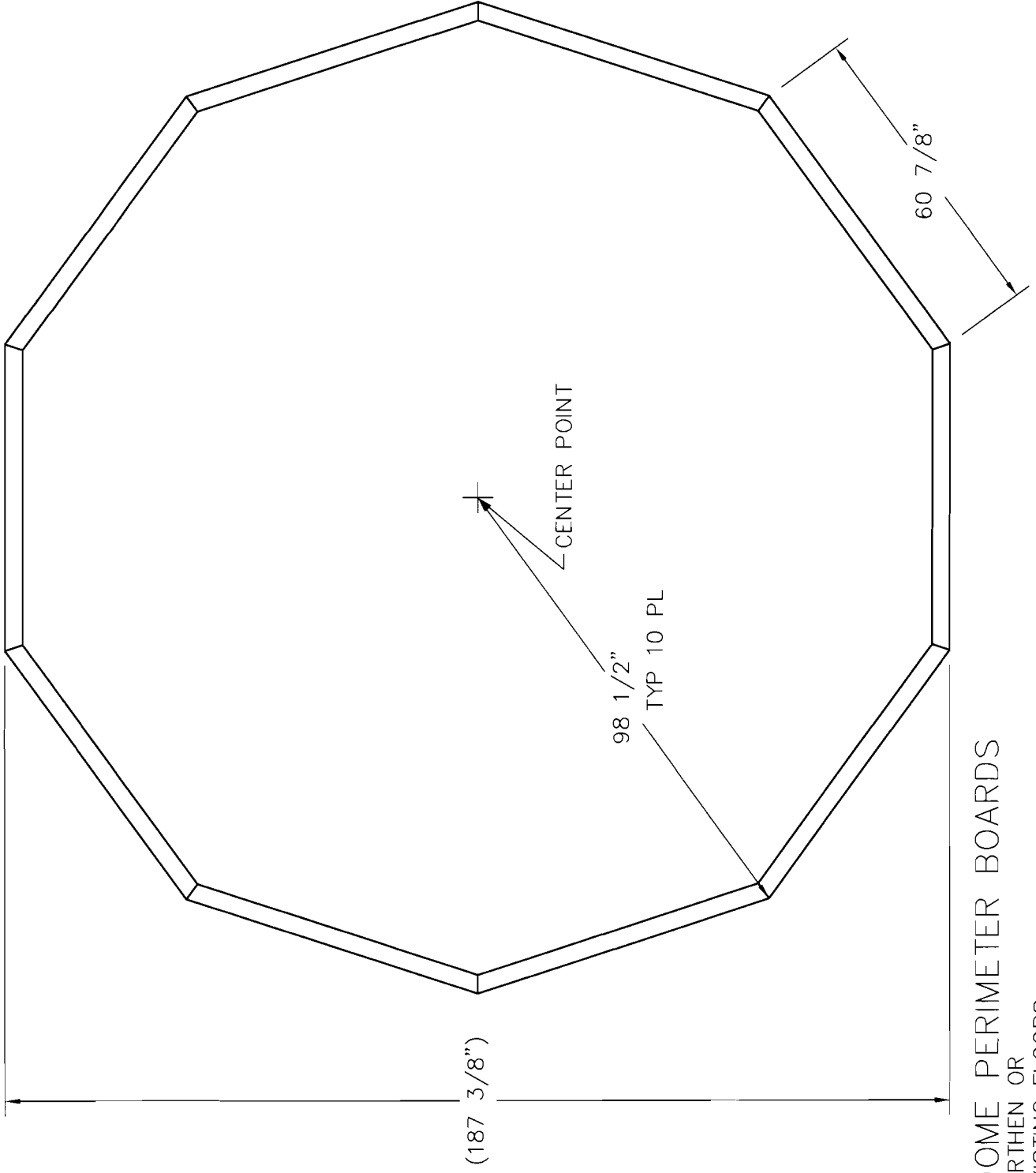
# 16 ft. Dome – Perimeter Boards for Setup on Earthen Floor

1. Cut ten pieces of lumber, 60-7/8" long on the long side, with 18° angles on each end (see *diagram*).

You may use 2x6, 2x8, 2x10, 2x12, 4x4, etc., cedar, redwood, or fir.

In the diagram the dashed line represents the width of 4" lumber. Shorter boards leave the dome skin close to the ground and, in moist situations, this may cause premature failure of the skin. Taller boards will make the dome taller and will be harder to step over when you enter the dome. Cedar, redwood or pressure treated fir is required to ensure resistance to rot in cases where the wood is in contact with the earth or moisture for extended periods of time.

2. Pre-drill pilot holes and screw adjacent perimeter boards together, from the outside, with galvanized or zinc chromate plated drywall screws, 3" or longer. For assembly on a pre-existing floor, seal between the boards with a quality caulk/sealant. We do not encourage setting up on a pre-existing floor because if it is not done properly, moisture will get in.
3. Measure and adjust the diameter in several places to resemble those shown in the diagram.
4. Make the perimeter boards coplanar with a visual check and the back of a hammer or other digging tool. Coplanar means "on the same plane." This is not necessarily level. Place your dome frame on the top of the perimeter board, placing the hubs on the outer edge of perimeter board points.
5. To anchor your dome against high winds, drill a hole through each perimeter board and pound rebar through the hole and into the ground.
6. Assemble the dome struts and cover with the skin.  
Fasten the skin to the perimeter boards through the grommets with the provided screws.



16' DOME PERIMETER BOARDS  
FOR EARTHEN OR  
PRE-EXISTING FLOORS

PACIFIC DOMES	DRAWING NAME: 16' PERIMETER	DRAWING NUMBER: SD-16-017	DATE: 15 FEB 2006	DRAWN BY: TES	PAGE: 1 OF 1	REV: A
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# **Cob Floors For Domes**

Use in conjunction with our wooden perimeter plans

## **General Info.**

Cob is a natural building material made from clay, sand, straw and water. Cob is an inexpensive alternative to wood or cement. Cob floors have an earthy and organic feel and can often be made from materials already available.

## **Siting and designing a cob floor:**

Choose a site for a cob floor at the top of a small rise or ridge where water will flow away from your dome. If your ground is sloped, you might consider having a multi-leveled floor. A multi-leveled floor can help define different areas, by stepping or gently sloping the cob-floor cold air can be directed, like water, to the lowest point. In some climates it is possible to use this method for cold storage, even instead of a refrigerator. Yet you should plan for your finished floor to be at least two inches above the ground.

## **Temperature:**

The temperature in the ground below the frost line is the same as the average yearly air temperature. This temperature is constant throughout the year. If this is a comfortable temperature, you can build your cob floor directly on the ground, and your floor will stay approximately the same temperature as the average air temperature. If the ground temperature is really cold, you may need to insulate underneath and around the edge of the floor. This will reduce the time it takes for heat from the sun or wood stove to reflect back into your space. You can get information from your local builders and building department about the optimum thickness of your cob floor and how deep the insulation should be. (Pretend its concrete as they probably won't understand cob yet.)

## **Passive solar:**

By facing your bay window to the south/southeast, you can optimize your floor's ability to gather heat from the sun in the winter. Cob floors have plenty of thermal mass and can effectively store this energy. Cob can also be used to make benches and wood stoves, which will increase thermal mass generated by your living space.

## **Radiant floor heating systems:**

Running hot water through pipes that are buried in the floor makes radiant floor heating systems. The water can be heated with a modified wood stove or a conventional water heat. This system is compatible with earthen and wood floors. If you choose this method, plan for the cob to be thick enough to cover the hot water pipes. You can find detailed information about radiant floor heating on the Internet.



# Building a Cob Floor

## Step 1: Site preparation

First remove the topsoil from your site. Put it where your garden will be! Then level and tamp the sub soil. A base is necessary under the cob unless the soil on site is stable, the area is very dry, and the water runoff from the dome can drain well. In any case you will want a good drainage system to keep your floor from being flooded. A few inches of hard gavel makes a good base, but the more gravel you can put under your perimeter the better. Using hard rock is important, as water will wick through soft rock. Sand or silty soil with a bit of clay also makes a good base, roughly level it. If you use a gravel base either sprinkle it with straw or place old sheets over the gravel. This is necessary to keep the dirt and cob from seeping down into the gravel.

## Step 2: The cob mix

The standard cob floor mix is made from 75-85% sand, and 15-25% clay, finely grated straw, and water. An alternative to straw is 15-25% horse or cow manure sifted through a 1/2 inch mesh, and water. Mix the ingredients together well, using your feet. Then put the mixture in a tarp and roll it like dough. The mixture should be stiff like dry brownie dough. You can also add school or carpenter's glue, ground psyllium seed husk, manure, blood, wood ash, oil, or flour to harden, add bounce, or color.

## Step 3: Applying the cob

Trowel the mix onto the base in big swaths 1/2" to 1 1/2" thick. You can do one or multiple layers with a final 1/2" finish layer. Start Applying the cob on the far side of the dome and work your way toward the door. The floor will need to dry for up to three weeks before it can be sealed. Drying time depends on the size, thickness, and wetness of the floor, air moisture and movement. Open up the windows and door to speed drying. It can take a month to dry in the winter.

**This is a summary of cob floor building.** It is not intended to be complete instructions. Please refer to [The Cob Builders Handbook](#) for more detailed instructions.

[The Cob Builder's Handbook](#) by Becky Bee is available from Groundworks, PO Box 381, Murphy, OR, 97533. They can also be contacted by email at [cobalot@hotmail.com](mailto:cobalot@hotmail.com), and their website is [www.cpros.com/~sequoia](http://www.cpros.com/~sequoia).

## Other Earthen Floor Possibilities:

Flat stones, brick, heavy clay, rammed earth, soil cement, and tiles can all be used to make an earthen floor. Depending on your artistic preference and the landscape you are building on, you can combine different earthen floors. A one-piece cob floor is the most durable type of earthen floor.